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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,433	10/18/2001	Koichi Takeuchi	09792909-5224	6653
33448	7590	12/09/2003	EXAMINER	
ROBERT J. DEPKE LEWIS T. STEADMAN HOLLAND & KNIGHT LLC 131 SOUTH DEARBORN 30TH FLOOR CHICAGO, IL 60603			KEBEDE, BROOK	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/982,433	Applicant(s) TAKEUCHI, KOICHI	
	Examiner Brook Kebede	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishibashi et al. (US/5,858,620).

The rejection that was mailed on April 16, 2003 is maintained and repeated herein below as of record.

Re claim 1, Ishibashi et al. disclose a pattern forming method, comprising the steps of: forming a first resist pattern (1) containing a photo-acid generating agent as a layer above a substrate (3) (see Fig. 2(b)); irradiating light over an exposed surface of the first resist pattern (see Col. 1, lines 40-67; Col. 3, lines 23-39); coating a resist film (2) containing a cross-linking agent, which reacts with acid, over the first resist pattern after said irradiation of the light in a state where it covers the first resist pattern (1); growing a cross-linked layer (4) at an interface between the first resist pattern (1) and the resist film (2); and thereby forming a second resist pattern comprised of the cross-linked layer (4) and the first resist pattern (1) (see Figs. 2(a) – 4(g); Col. 1, line 33 – Col. 9, line 48).

Re claim 3, as applied to claim 1 above, Ishibashi et al. disclose all the claimed limitation including the limitation wherein a base resin of a resist material forming the first resist pattern

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containing the photo-acid generating agent is one selected from the group consisting of methacrylic resin and cycloolefin resin (see Col. 2, lines 5-9).

Re claim 4, as applied to claim 1 above, Ishibashi et al. disclose all the claimed limitation including the limitation wherein a base resin of the resist film containing the cross-linking agent, which reacts with the acid, is one selected from the group consisting of polyvinyl alcohol system resin, polyacrylic acid system resin, and polyvinyl acetal system resin (see Col. 2, lines 19-31; Col. 3, lines 53-67).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al. (US/5,858,620) in view of Ohta et al. (US/5,52,150).

The rejection that was mailed on April 16, 2003 is maintained and repeated herein below as of record.

Re claim 2, as applied to claim 1 above, Ishibashi et al. disclose all the claimed limitations including the use of light. Although it is well-known in the art to use ArF excimer laser light and KrF excimer laser light during processing and patterning of resist film, Ishibashi et al. do not specifically disclose wherein the light is one selected from the group consisting of ArF excimer laser light and KrF excimer laser light.

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Ohta et al. disclose the use of light selected from the group consisting of ArF excimer laser light and KrF excimer laser light during lithography process. Ohta et al. disclose that “Given as examples of such a short wavelength radiation are deep ultraviolet rays, such as a bright line spectrum of a mercury lamp (wavelength 254 nm), a KrF excimer laser (wavelength 248 nm), and an ArF excimer laser (wavelength 193 nm); X-rays such as synchrotron radiation; and charged particle rays such as an electron beam. Of these, lithography using an excimer laser is attracting a great attention due to its high output and high efficiency. For this reason, the resists used in lithography also must produce minute patterns of 0.5 μm or less with high sensitivity and high resolution by excimer laser with good reproducibility.” (see Col. 1, lines 28-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of applicant(s) claimed invention was made to have provided Ishibashi et al. reference with KrF or ArF excimer laser light as taught by Ohta et al. because high output and high efficiency patterns would have been produced during lithography process.

Response to Arguments

5. Applicant's arguments filed September 22, 2003 have been fully considered but they are not persuasive.

Applicant argued that “Ishibashi merely teaches activating the cross-linking agent by radiation after applying the second resist layer and significantly fails to provide any teachings suggestion whatsoever regarding Applicant's claimed invention ...”

In response to the applicant's argument, the Examiner respectfully submits that such an argument is not commensurate with the scope of the claims, in particular, as stated above. With

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regarding claims 1, 3, and 4, Ishibashi et al. '620 teach all the claimed limitations as applied in Paragraph 2 herein above. In addition, the Examiner respectfully submits that Ishibashi et al. '620 teach forming a first resist pattern (1) containing a photo-acid generating agent as a layer above a substrate (3) (see Figs. 2(b)); irradiating light over an exposed surface of the first resist pattern (see Col. 1, lines 40-67; Col. 3, lines 23-39); coating a resist film (2) containing a cross-linking agent, which reacts with acid, over the first resist pattern after said irradiation of the light in a state where it covers the first resist pattern (1); growing a cross-linked layer (4) at an interface between the first resist pattern (1) and the resist film (2); and thereby forming a second resist pattern comprised of the cross-linked layer (4) and the first resist pattern (1) (see Ishibashi et al. '620 Figs. 2(a) – 4(g); Col. 1, line 33 – Col. 9, line 48).

Therefore, the rejection under 35 U.S.C. 102 is deemed proper.

With regarding claim 2, the combination of Ishibashi et al. '620 and Ohta et al. '150 teach all the claimed limitations as applied in Paragraph 4 herein above.

Therefore, the *prima facie* case of obviousness has been met and the rejection under 35 U.S.C. § 103 is deemed proper.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Santo (JP/10208997) also disclose similar inventive subject matter.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Correspondent

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (703) 306-4511. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Brook Kebede
BK
December 7, 2003


W. David Coleman
Primary Examiner